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RECORD OF ORAL HEARING

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LARS SEVERINSSON

Appeal 2007-2898
Application 10/722,938
Technology Center 3600

Oral Hearing Held: April 10, 2008

Before TERRY J. OWENS, HUBERT C. LORIN, and JOHN C. KERINS, Administrative Patent Judges

ON BEHALF OF THE APPELLANT:

BENJAMIN J. LEHBERGER, ESQUIRE
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The above-entitled matter came on for hearing on Thursday, April 10, 2008, commencing at 10:47 a.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia, before Ashorethea Cleveland, Notary Public.

PROCEEDINGS

MR. LEHBERGER: My name is Ben Lehberger. I'm here to discuss application 10/722,938. This application relates to a vehicle brake system and particularly a device for measuring brake forces in the system.

It's intended to overcome a problem in such devices where heat interferes with the sensor that is sensing the brake force. This is done by providing an elastically deformable medium and sensor that is located remote to the medium and the brake forces that are transmitted to the force sensors in a movable push rod.

Claims one through three have been rejected as being obvious in view of Rinsma and in the second reference Kojima. These rejections are improper because Rinsma does not disclose a force sensor or a push rod; and it actually teaches away from using a push rod and a remote sensor. Therefore, the combination would be improper.

Also, adding a push rod to Rinsma would change the basic design operating principles and thus that combination would also be improper.

International patent application of Rinsma teaches an actuator and brake caliper, with a primary objective of alleviating problems associated with transverse forces. To this end, they teach a resilient pressure means which is temperature resistant and there's a sensor that is directly adjacent, engaging fluid and senses the pressure of that fluid in determining brake force.

The application teaches the advantages of this arrangement and the advantage of measuring pressure fluid to avoid problems associated with

non-axial and eccentric loading that hampers the measurements of the sensor.

Therefore, because of these teachings, we think it would be against these teachings to add a push rod between the fluid and the sensor because it could actually lead to problems associated with non-axial loading.

JUDGE KERINS: Counsel, could you elaborate on that a little bit?

MR. LEHBERGER: Sure. We believe the physical push rod, a rigid device in there, could actually experience non-axial loadings.

If you look at the figure three in Rinsma that's referenced by the Examiner, if there were to be a push rod in there, it could be impacted by screw mechanism -- 24 -- and there could be non-axial loading associated with it; and actually, in reference to our design and the claim invention that is shown in figure three, you can see that the location of our medium could actually be affected by non-axial loadings. Therefore, they would not seek out such a design to solve the problem of avoiding non-axial loadings.

JUDGE KERINS: You refer to embodiment of your invention?

MR. LEHBERGER: Yes.

JUDGE KERINS: That's not the claim -- that particular positioning of the push rod is not in your claim under appeal; is it?

MR. LEHBERGER: Well, there was a restriction requirement to figures two and three. So, we did elect that species; and even so, without reference to our figure, I believe if you were to put a push rod in the Rinsma design, I think it would potentially be impacted by the screw itself and could experience non-axial loads that affect the sensor.

JUDGE KERINS: But in Rinsma, isn't there a considerable amount of open space where the force sensor currently is?

MR. LEHBERGER: There is but they specifically teach that the sensor is adjacent to and in contact with the movement.

So, I personally can't imagine how the push rod would be added to this but it seems that it could be in contact with the gearing device.

JUDGE KERINS: Well, in the Kojima reference, the piezoelectric sensor is not directly -- but it is actually measuring pressure; correct?

MR. LEHBERGER: I believe it is; but in our claim invention we measuring force and the push rod is claimed as being in contact with the medium.

JUDGE KERINS: The push rod is being claimed in contact with a resilient medium?

MR. LEHBERGER: In our claim it's an elastically deformable medium.

JUDGE KERINS: Is it your position that the oil in the Rinsma application is not an elastically deformable medium?

MR. LEHBERGER: No. It is our position it is not.

JUDGE KERINS: It is not?

MR. LEHBERGER: It's a fluid and fluid is by its nature not elastic. It does not return to its original shape when it's impacted by force.

JUDGE KERINS: I'm not certain I saw that in the brief. Was that a point that was raised?

MR. LEHBERGER: I don't believe it was raised in the brief; no.

JUDGE KERINS: The Examiner contends that putting the push rod and the piezoelectric sensor from the Kojima reference into the Rinsma device did not require substantial modification. Can you comment on that?

MR. LEHBERGER: Well, we disagree. For one, they're sensing pressure. We're sensing force.

JUDGE KERINS: What would the difference be there?

MR. LEHBERGER: Well, there are many different types of piezoelectric sensors to measure force, vibration, pressure. In this case, we have a push rod that is in direct contact, in contact with the medium. In here it's a fluid and there might have to be some kind of adjustment to have a push rod in contact with a fluid --

JUDGE KERINS: Well, in Kojima there's a diaphragm and the diaphragm is actually in contact with the fluid; is it not?

MR. LEHBERGER: I believe the diaphragm is, yes; but the push rod is not.

JUDGE KERINS: So, your position is then that a direct modification of incorporating Kojima device into the Rinsma system would not have a push rod in direct connection, direct contact with the medium?

MR. LEHBERGER: Yes.

JUDGE KERINS: In terms of physically incorporating something such as shown in Kojima into the Rinsma device, the Examiner basically said you would remove the force sensor in the Rinsma device and simply replace it with the force sensor in Kojima. Do you see a particular problem with that?

MR. LEHBERGER: I do see a problem in the sense that the reference teaches away from doing that. They say that the load sensor is in contact with and sensing the pressure.

They also teach reasons to avoid heat. They teach the sensors in particular location that's shielded from heat; and therefore, it would be

against those teachings to actually move the sensor from a particular location where they found it avoids problems.

JUDGE KERINS: If one were to incorporate the Kojima sensor into the Rinsma device wouldn't it further remove the piezoelectric element from the heat?

MR. LEHBERGER: I can't be certain from my reference. There are other moving parts such as bearings and things that are farther upstream from there and it's possible there are other heating sources.

JUDGE KERINS: Well, the Rinsma reference itself is trying to space the sensor from the brake actuation here, where the brakes are actually -- pads are contacting. That is the reason for the channel that extends from the -- fluid channel that extends back to the sensor, is it not? That spaces the sensor from the high-heat area at the left side of figure three.

MR. LEHBERGER: I believe for heat reasons, that is essentially why they're put there.

JUDGE KERINS: Since this case was briefed, we've had a Supreme Court Decision in KSR which in most people's view moves away from a rigid test of motivation and suggestion. Could you comment on whether or not this could be viewed as a simple substitution of one known sensor for another, obtaining predictable results?

MR. LEHBERGER: I don't think so because the requirements of the claim versus a forced sensor and not a pressure sensor. So, even if you were to substitute in there, it would not meet claim obligations; and also, due to specific teachings in there, one would be motivated to do this. Again, they put it in there not as a push rod that is in contact with a medium.

The Rinsma application is directed towards a totally direct way of avoiding problems with heat and it achieves it in a totally different way.

JUDGE KERINS: Isn't Rinsma saying we're avoiding the problems with heat by spacing the sensor away from where the heat is?

MR. LEHBERGER: Well, that and also pulling up pressure and liquid and sensing the pressure of the liquid. I don't know why they would go back to a push rod.

JUDGE KERINS: I'm not certain I read it. Did Rinsma discuss that the prior art failed as a push rod? You said you don't see why they would go back to a push rod.

MR. LEHBERGER: Well, yeah. I don't think they specifically discussed the prior art in the push rod though.

JUDGE KERINS: Going back, just so I'm clear on this, you I think are now making a distinction between force sensor and pressure sensor.

MR. LEHBERGER: Yes.

JUDGE KERINS: My understanding -- if you could help me understand better, I'd appreciate it -- of a piezoelectric element is that it is simply converting the stress that it experiences, converting that to electric signal. I'm not sure I see the difference, given that, between a particular material being used as a force or pressure sensor.

MR. LEHBERGER: I understand and it's described in this reference that there are several types within the Kojima reference, in the first column, how they can sense pressure, vibration and force, and this one is particularly adapted to pressure in a diaphragm which ours does not have. But even in that, it's a different device.

I imagine the piezoelectric element itself is probably similar but the rest of the workings of the sensor are not.

JUDGE KERINS: Did you have anything further? Sorry to have hijacked your argument but there were some issues that I wanted to specifically cover with you.

MR. LEHBERGER: Okay. I believe that's all I have unless there are any more questions.

JUDGE OWENS: No. Thank you.

(Whereupon, at approximately 11:00 a.m., the proceedings were concluded).